

Note to readers with disabilities: *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to [508 standards](#) due to the complexity of the information being presented. If you need assistance accessing journal content, please contact ehponline@niehs.nih.gov. Our staff will work with you to assess and meet your accessibility needs within 3 working days.

Supplemental Material

Estimates of Soil Ingestion in a Population of Chinese Children

Chunye Lin, Beibei Wang, Xiaoyong Cui, Dongqun Xu, Hongguang Cheng, Qin Wang, Jin Ma, Tuanyao Chai, Xiaoli Duan, Xitao Liu, Junwei Ma, Xuan Zhang, and Yanzhong Liu

Table of Contents

Figure S1. Histogram and basic statistical parameters of investigated child population age, height, and weight.

Figure S2. Histogram and basic statistical parameters of daily food ingestion (FOww) and feces (FCdw) and urine excretion for investigated child population. (Notes: Median daily wet weight of food consumed by the investigated Chinese children population was 1013 g d^{-1} , ranging from 267 to 1758 g d^{-1} . These values are slightly higher than those (918 , 349 to 1154 g d^{-1}) for American 2- to 7-year-old children (Davis et al. 1990). Median daily dry weight of excreted faeces for investigated Chinese children was 17.0 g d^{-1} , ranging from 2.4 to 63.8 g d^{-1} . These values are slightly higher than those (12.7 , 4.3 to 31.2 g d^{-1}) for American 2- to 7-year-old children (Davis et al. 1990)).

Figure S3. Frequency distribution histogram and outlier box of soil ingestion rate (SIR) based on tracer Al, Ba, Ce, Mn, Sc, Ti, V, and Y separately.

Figure S4. Frequency distribution histogram and outlier box of soil ingestion rate (SIR) based on tracer Al, Ba, Ce, Mn, Sc, Ti, V, and Y after removing the outliers in Supplemental Material, Figure 3.

Table S1. Basic statistical parameters of tracer element concentrations in food.

Table S2. Basic statistical parameters of tracer element concentrations in faeces.

Table S3. Basic statistical parameters of tracer element concentrations in urine.

Table S4. Basic statistical parameters of tracer element concentrations in the soil of Shenzhen urban and suburban.

Table S5. Basic statistical parameters of tracer element concentrations in the soil of Wuhan urban and suburban.

Table S6. Basic statistical parameters of tracer element concentrations in the soil of Lanzhou urban and suburban.

Table S7. Basic statistical parameters of tracer element concentrations in the drinking water from Shenzhen, Wuhan, and Lanzhou urban and suburban.

Table S8. Reference values and measured value of tracer elements in reference materials.

Table S9. Recovery or accuracy of food and urine element analysis tested by analyzing urine samples spiked by a given amount of tracer elements.

Table S10. Coefficients of variation for replicate measurements on 20 soil samples.

Table S11. Coefficients of variation for replicate measurements on 28 faeces samples.

Table S12. Coefficients of variation for replicate measurements on 39 urine samples.

Table S13. Coefficients of variation for replicate measurements on 15 drinking water samples.

Table S14. Coefficients of variation for replicate measurements on 31 food samples.

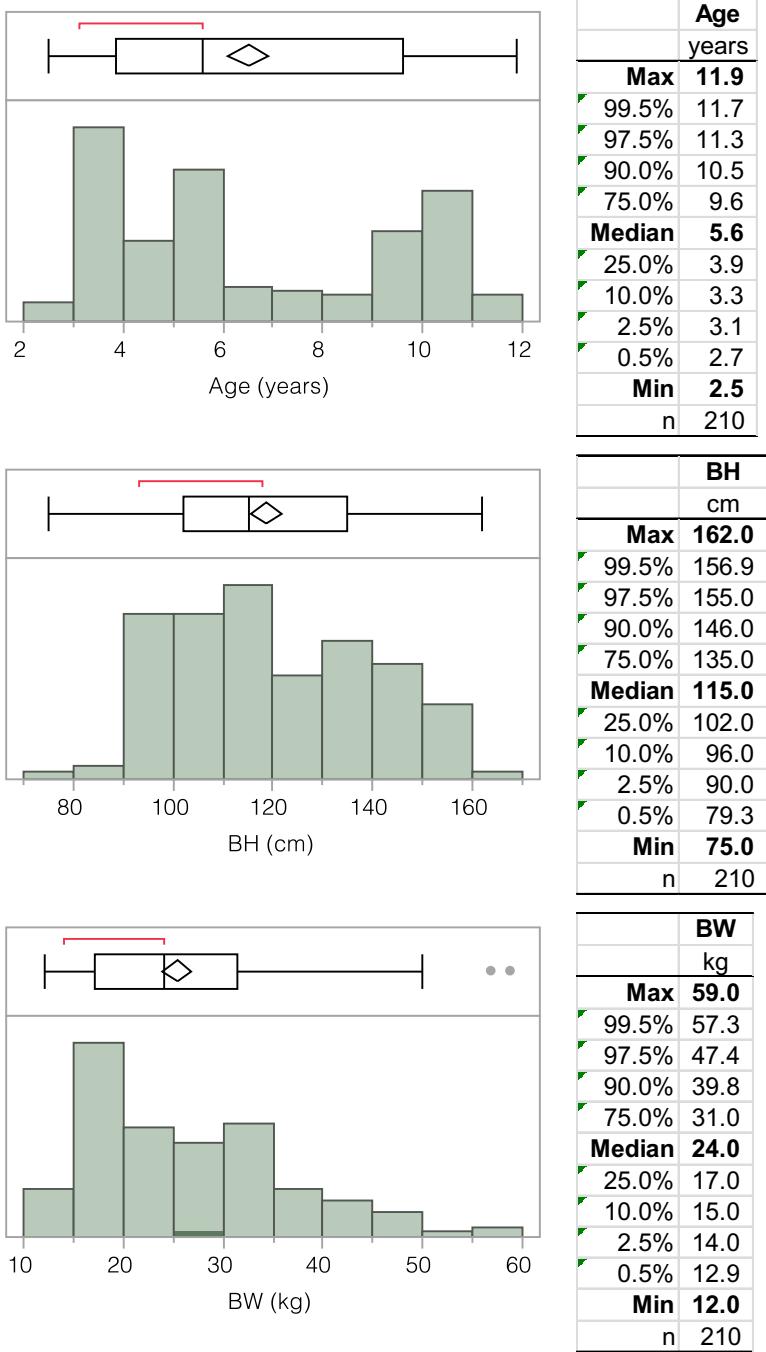


Figure S1. Histogram and basic statistical parameters of investigated child population age, height, and weight.

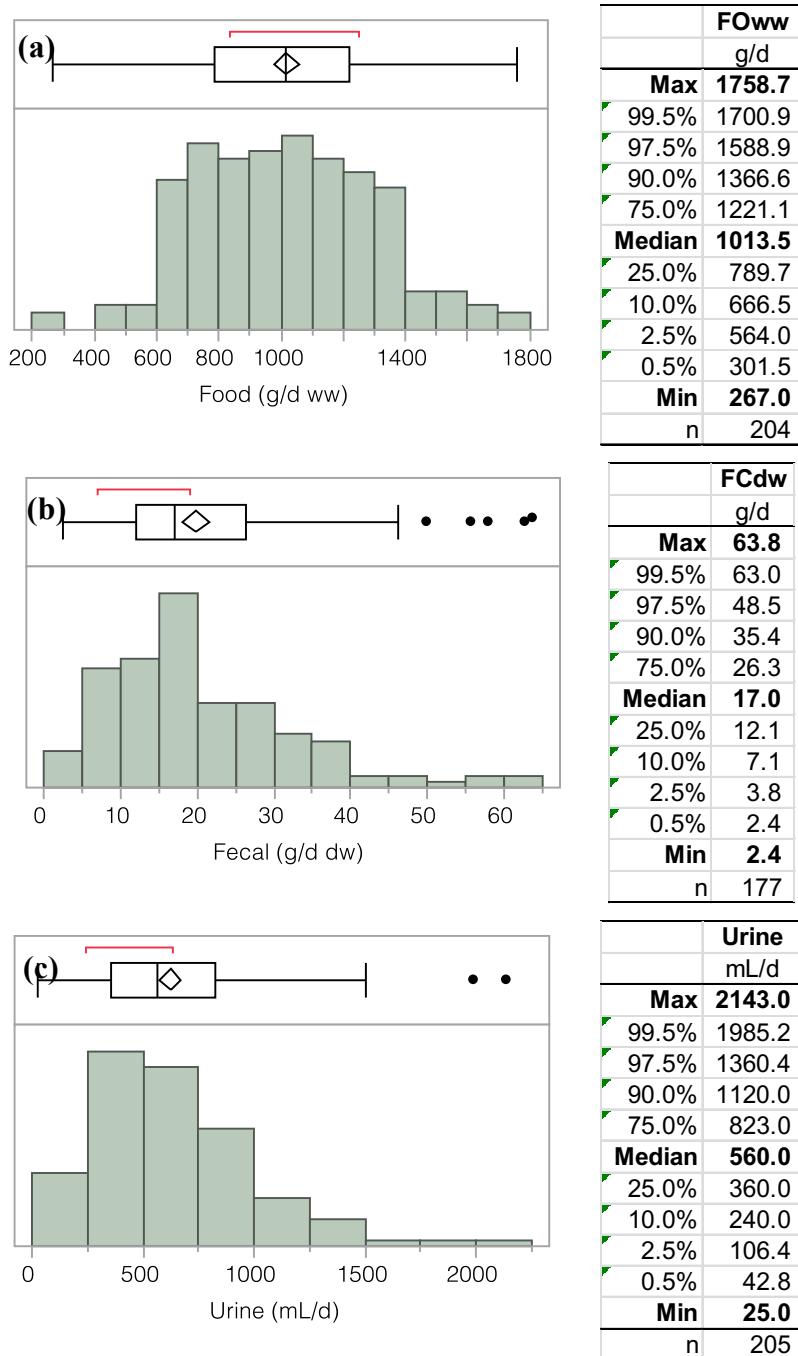


Figure S2. Histogram and basic statistical parameters of daily food ingestion (FOww) and feces (FCdw) and urine excretion for investigated child population. (Notes: Median daily wet weight of food consumed by the investigated Chinese children population was 1013 g d⁻¹, ranging from 267 to 1758 g d⁻¹. These values are slightly higher than those (918, 349 to 1154 g d⁻¹) for American 2- to 7-year-old children (Davis et al. 1990). Median daily dry weight of excreted faeces for investigated Chinese children was 17.0 g d⁻¹, ranging from 2.4 to 63.8 g d⁻¹. These

values are slightly higher than those (12.7, 4.3 to 31.2 g d⁻¹) for American 2- to 7-year-old children (Davis et al. 1990)).

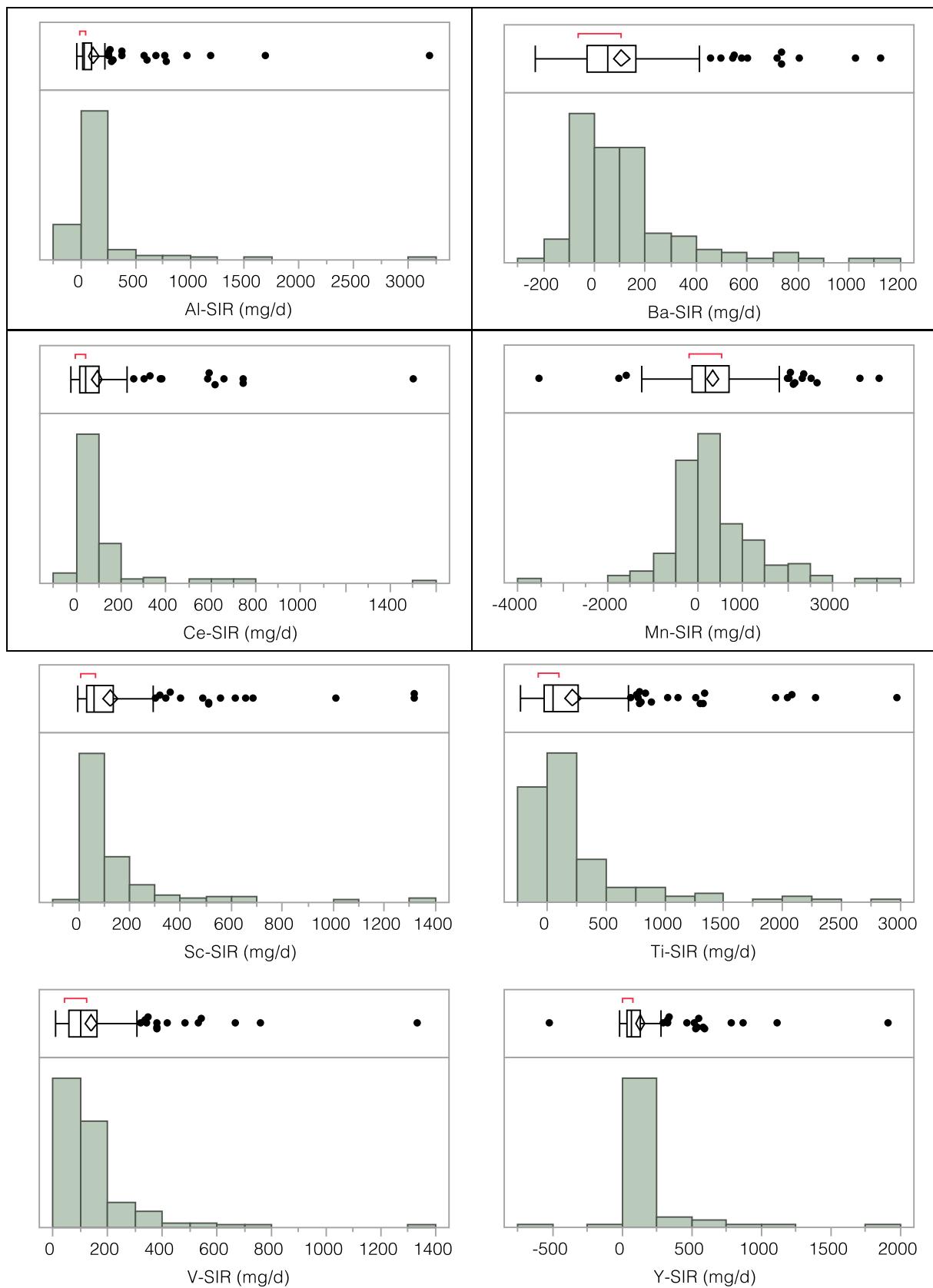


Figure S3. Frequency distribution histogram and outlier box of soil ingestion rate (SIR) based on tracer Al, Ba, Ce, Mn, Sc, Ti, V, and Y separately.

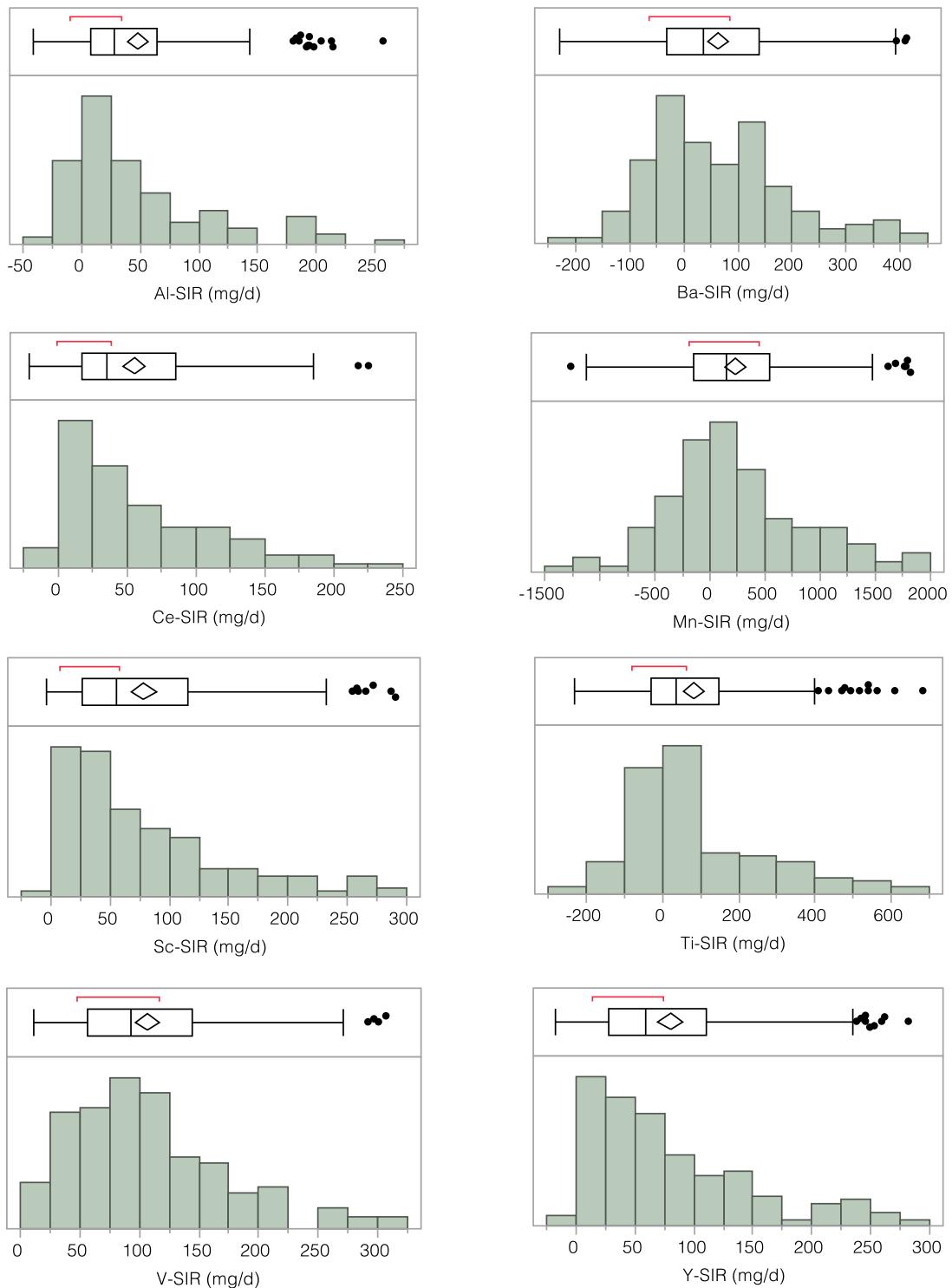


Figure S4. Frequency distribution histogram and outlier box of soil ingestion rate (SIR) based on tracer Al, Ba, Ce, Mn, Sc, Ti, V, and Y after removing the outliers in Supplemental Material, Figure 3.

Table S1. Basic statistical parameters of tracer element concentrations in food.

	Al	Ba	Ce	Mn	Sc	Ti	V	Y
	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Max	5395.7	145.38	3.05	892.0	0.060	1320.3	0.180	0.959
99.5%	4902.2	135.77	2.79	884.4	0.060	1062.0	0.180	0.799
97.5%	3282.9	116.99	2.08	768.2	0.060	896.8	0.180	0.710
90.0%	2076.1	91.99	1.43	553.7	0.060	639.4	0.180	0.592
75.0%	1474.1	76.09	0.89	427.4	0.060	515.4	0.180	0.418
Median	959.1	62.06	0.55	299.8	0.060	343.5	0.180	0.125
25.0%	727.0	54.89	0.27	232.2	0.060	277.8	0.180	0.027
10.0%	495.4	40.10	0.13	170.7	0.060	235.7	0.180	0.003
2.5%	318.9	32.54	0.06	147.4	0.060	196.3	0.180	0.002
0.5%	245.4	28.58	0.02	118.1	0.060	172.9	0.180	0.001
Min	244.3	26.83	0.02	42.4	0.060	170.8	0.180	0.001
n	201	203	207	206	210	208	210	198

Table S2. Basic statistical parameters of tracer element concentrations in faeces.

	Al	Ba	Ce	Mn	Sc	Ti	V	Y
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Max	1677.3	11.03	0.806	54.78	0.151	150.45	0.829	0.395
99.5%	1456.4	9.29	0.806	54.12	0.135	137.64	0.827	0.377
97.5%	1012.9	8.64	0.682	52.10	0.118	119.58	0.761	0.299
90.0%	532.6	7.32	0.474	37.52	0.103	73.76	0.565	0.222
75.0%	321.4	5.67	0.326	30.21	0.073	48.75	0.487	0.158
Median	178.3	4.58	0.219	24.01	0.039	28.17	0.371	0.101
25.0%	109.5	3.64	0.134	17.98	0.024	15.55	0.289	0.062
10.0%	58.5	2.92	0.093	13.40	0.016	8.62	0.232	0.044
2.5%	41.4	1.86	0.056	11.08	0.009	3.22	0.131	0.034
0.5%	27.0	1.02	0.019	4.84	0.005	2.35	0.055	0.010
Min	24.1	0.31	0.016	1.30	0.002	2.05	0.033	0.005
n	172	173	171	178	171	171	170	173

Table S3. Basic statistical parameters of tracer element concentrations in urine.

	Al μg/L	Ba μg/L	Ce μg/L	Mn μg/L	Sc μg/L	Ti μg/L	V μg/L	Y μg/L
Max	709.1	38.64	0.591	9.01	0.201	35.34	2.49	0.206
99.5%	692.7	37.32	0.583	8.68	0.199	32.87	2.46	0.183
97.5%	660.4	36.24	0.554	7.64	0.176	26.93	2.31	0.174
90.0%	600.5	31.12	0.507	6.04	0.136	20.55	2.14	0.150
75.0%	553.0	26.97	0.450	4.85	0.103	15.59	1.94	0.114
Median	88.6	20.55	0.339	3.95	0.081	7.87	1.54	0.078
25.0%	43.8	9.39	0.075	3.39	0.058	4.18	0.57	0.048
10.0%	17.3	6.49	0.052	2.93	0.011	1.33	0.41	0.028
2.5%	5.0	4.80	0.035	2.11	0.005	1.02	0.26	0.017
0.5%	5.0	3.55	0.025	1.73	0.005	1.02	0.22	0.014
Min	5.0	2.94	0.024	1.66	0.005	1.02	0.20	0.014
n	190	198	197	196	193	194	203	194

Table S4. Basic statistical parameters of tracer element concentrations in the soil of Shenzhen urban and suburban.

	Al	Ba	Ce	Mn	Sc	Ti	V	Y	As
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Max	132617.6	627.37	214.72	757.23	20.66	6140.15	155.33	46.85	17.45
99.5%	131022.3	613.42	204.05	756.67	20.02	6109.90	151.01	46.21	16.73
97.5%	124664.6	561.89	165.83	751.03	17.93	5911.55	135.64	43.34	14.13
90.0%	112346.5	509.28	146.74	653.72	15.35	5281.28	107.36	33.91	12.64
75.0%	123095.1	554.46	163.15	744.41	17.83	5797.11	133.39	42.17	13.81
Median	85526.5	409.22	99.18	378.07	10.55	4033.58	68.51	23.55	5.70
25.0%	69180.9	344.30	76.86	302.95	8.54	2997.27	44.61	18.63	3.26
10.0%	49989.7	255.96	64.88	266.19	5.17	2324.67	34.40	12.63	2.69
2.5%	35457.9	219.68	40.67	113.37	4.44	1932.46	27.61	9.17	2.09
0.5%	32860.9	191.52	35.35	94.85	3.83	1672.91	25.25	7.31	0.88
Min	32812.9	183.37	34.35	91.39	3.64	1612.42	24.55	6.77	0.51
Mean	82605.4	402.14	102.83	402.57	10.87	3836.46	73.52	23.41	6.74
SD	23631.9	97.10	35.67	157.77	4.06	1135.91	32.46	8.68	3.95
CV%	28.6	24.1	34.7	39.2	37.3	29.6	44.1	37.1	58.6
n	50	47	46	46	50	50	50	46	48

Table S5. Basic statistical parameters of tracer element concentrations in the soil of Wuhan urban and suburban.

	Al	Ba	Ce	Mn	Sc	Ti	V	Y	As
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Max	78617.6	1084.35	104.40	1115.01	16.66	5945.46	127.96	36.84	16.56
99.5%	78231.7	1071.79	101.64	1103.83	16.58	5888.05	120.44	36.70	16.56
97.5%	73691.5	1046.79	92.11	1081.42	15.45	5265.39	107.10	35.86	15.91
90.0%	67754.1	760.07	79.94	1010.44	12.34	4777.64	100.64	29.00	12.86
75.0%	72790.9	1044.15	89.77	1079.84	15.31	5142.99	107.09	34.46	15.06
Median	56938.2	514.43	70.87	705.08	10.38	3972.68	83.51	23.92	8.51
25.0%	49639.0	473.66	55.40	624.42	8.57	3154.64	67.96	20.56	7.01
10.0%	41243.8	419.93	47.75	517.46	7.08	2622.00	58.04	18.17	5.74
2.5%	36069.6	370.00	33.90	449.61	5.93	1883.71	46.40	15.81	3.57
0.5%	28110.5	346.78	30.06	414.33	5.77	1799.79	42.77	15.11	3.45
Min	27958.2	346.00	29.54	399.37	5.70	1772.25	41.07	14.77	3.45
Mean	55508.2	572.06	66.96	732.79	10.20	3814.88	80.76	23.95	9.00
SD	10285.2	166.00	14.91	173.76	2.32	898.32	17.18	4.61	2.94
CV%	18.5	29.0	22.3	23.7	22.7	23.5	21.3	19.3	32.7
n	82	73	85	83	84	87	84	81	88

Table S6. Basic statistical parameters of tracer element concentrations in the soil of Lanzhou urban and suburban.

	Al	Ba	Ce	Mn	Sc	Ti	V	Y	As
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Max	65035.5	667.90	72.00	674.59	12.88	3521.83	79.63	27.57	16.81
99.5%	64703.6	658.12	70.95	671.77	12.62	3494.56	78.13	27.55	16.17
97.5%	63918.0	632.03	68.70	653.15	12.09	3398.68	75.24	27.15	15.05
90.0%	62349.4	600.68	66.12	638.41	11.71	3267.88	73.91	26.66	13.73
75.0%	63778.3	629.74	68.46	648.06	12.05	3376.84	75.20	27.02	15.02
Median	58206.2	509.41	60.50	603.64	10.57	2992.38	68.16	24.72	12.02
25.0%	54948.8	484.78	56.48	574.49	9.66	2788.28	64.19	23.52	10.50
10.0%	52217.3	473.09	51.55	539.14	8.54	2595.75	59.63	21.83	9.45
2.5%	46786.4	456.22	46.81	518.10	7.58	2321.60	53.10	19.45	8.28
0.5%	46308.1	435.72	45.68	506.02	7.20	2232.26	52.74	18.28	6.85
Min	46084.8	433.01	45.51	500.23	7.03	2206.27	52.61	18.26	6.27
Mean	57532.9	522.67	59.58	597.24	10.36	2955.45	67.45	24.40	11.74
SD	4188.2	50.59	5.48	37.48	1.21	271.83	5.73	2.07	1.84
CV%	7.3	9.7	9.2	6.3	11.7	9.2	8.5	8.5	15.7
n	75	73	74	70	74	74	71	71	74

Table S7. Basic statistical parameters of tracer element concentrations in the drinking water from Shenzhen, Wuhan, and Lanzhou urban and suburban.

	Al μg/L	Ba μg/L	Ce μg/L	Mn μg/L	Sc μg/L	Ti μg/L	V μg/L	Y μg/L	As μg/L
Max	1390.8	98.62	0.120	10.81	0.027	4.89	2.070	0.042	3.816
99.5%	1089.2	90.25	0.098	8.86	0.026	4.87	2.058	0.037	3.582
97.5%	624.3	73.34	0.067	5.20	0.025	4.18	1.892	0.021	2.658
90.0%	191.4	62.74	0.062	1.29	0.016	1.81	1.771	0.014	2.468
75.0%	126.5	58.38	0.058	0.58	0.009	0.55	0.992	0.009	1.632
Median	23.3	43.04	0.016	0.32	0.006	0.30	0.528	0.007	1.039
25.0%	9.3	16.53	0.007	0.17	0.004	0.21	0.291	0.006	0.720
10.0%	6.7	1.23	0.006	0.11	0.002	0.18	0.127	0.003	0.318
2.5%	5.3	0.72	0.004	0.08	0.001	0.11	0.019	0.002	0.159
0.5%	4.9	0.47	0.003	0.07	0.001	0.11	0.008	0.002	0.159
Min	4.7	0.31	0.003	0.07	0.001	0.10	0.002	0.002	0.159
Mean	91.6	36.67	0.029	0.69	0.008	0.68	0.721	0.008	1.223
SD	184.9	25.48	0.026	1.45	0.006	0.98	0.566	0.006	0.751
CV%	201.9	69.5	90.1	208.8	80.3	144.7	78.5	72.6	61.4
n	85	85	85	85	58	81	77	85	85

Table S8. Reference values and measured value of tracer elements in reference materials.

Reference sample		Al	Ba	Ce	Mn	Sc	Ti	V	Y
		%	mg kg ⁻¹						
GSS11	Reference value	6.96	634.0	65.0	572.0	10.0	3920.0	74.0	23.6
	Measure	6.10	589.5	57.5	573.2	9.2	3942.8	72.5	24.5
	Measure	6.91	643.3	59.6	631.3	9.9	4109.6	78.5	25.8
	Measure	5.99	624.5	54.6	599.3	9.3	4029.8	76.2	23.3
GSS13	Reference value	6.23	500.0	66.0	580.0	10.5	3820.0	74.0	24.5
	Measure	6.32	480.7	65.1	584.6	10.6	3672.3	73.4	25.6
	Measure	5.91	501.4	63.4	611.7	10.2	3771.0	75.8	25.5
	Measure	6.16	481.4	66.5	593.9	11.0	3676.9	74.0	26.6
GSS17	Reference value	5.11	606.0	25.0	309.0	5.1	1910.0	40.0	12.7
	Measure	5.27	609.8	24.0	332.5	5.5	2096.8	40.9	14.0
	Measure	5.47	632.3	25.0	338.6	5.9	2159.5	41.4	14.8
	Measure	5.46	595.7	24.7	323.4	5.8	2050.3	40.0	14.0
GSS21	Reference value	6.33	510.0	52.0	700.0	11.2	3700.0	75.0	27.0
	Measure	6.43	515.7	48.4	700.9	11.5	3806.7	76.2	30.5
	Measure	6.38	494.1	50.8	694.6	11.2	3655.1	72.0	30.5
	Measure	6.65	546.3	53.4	734.9	11.4	3925.1	76.0	29.3
	Measure	7.03	552.2	57.0	742.2	12.0	3963.8	77.2	31.3
GSS22	Reference value	7.35	749.0	81.0	755.0	10.4	3800.0	69.0	25.0
	Measure	7.15	735.5	72.8	778.4	10.5	3761.2	69.8	24.4
	Measure	7.25	732.5	78.5	779.6	10.5	3690.3	68.8	26.7
	Measure	7.11	771.1	75.3	781.4	9.3	3834.2	68.4	20.3
	Measure	7.41	805.2	76.4	805.0	9.4	3984.0	71.7	22.5
GSS25	Reference value	6.23	495.0	71.0	632.0	11.6	3900.0	77.0	27.0
	Measure	6.74	509.6	73.8	681.5	11.8	4147.6	82.7	29.5
	Measure	6.27	487.4	69.4	658.2	11.1	3856.4	78.5	27.9
	Measure	6.31	475.4	68.5	613.6	11.6	3587.5	74.6	27.6
	Measure	6.35	471.9	68.6	614.7	11.4	3623.9	74.1	27.5
	Measure	6.51	516.4	76.6	638.1	11.4	4022.3	78.7	27.7
GSS26	Reference value	6.21	504.0	70.0	561.0	10.6	4100.0	72.0	27.0
	Measure	6.03	507.5	69.4	570.2	10.5	4079.4	72.6	27.3
	Measure	6.31	501.0	71.0	566.2	11.0	4052.7	71.5	28.9
	Measure	6.55	561.5	73.8	591.0	10.9	4285.4	75.0	26.7
Recovery (%)	Mean	100.73	100.7	97.6	103.5	100.6	101.7	101.2	104.7
	Minimum	86.07	93.0	84.0	97.1	89.1	92.0	96.0	81.1
	Maximum	110.95	111.4	109.5	110.4	115.8	113.1	107.4	116.2

Table S9. Recovery or accuracy of food and urine element analysis tested by analyzing urine samples spiked by a given amount of tracer elements.

	Mean	Range	n
Al	98.4	87.1-110.5	48
Ba	100.4	92.5-110.1	48
Ce	99.8	90.1-106.7	48
Mn	106.9	96.1-119.6	48
Sc	97.8	83.5-115.9	48
Ti	97.3	87.2-113.9	48
V	99.9	91.5-114.3	48
Y	96.1	82.2-108.4	48

Table S10. Coefficients of variation for replicate measurements on 20 soil samples.

Sample	Al	Ba	Ce	Mn	Sc	Ti	V	Y
	%	%	%	%	%	%	%	%
1	0.6	4.0	6.6	0.7	1.3	5.2	1.3	6.0
2	2.9	3.9	3.2	3.2	0.7	6.3	1.6	3.2
3	3.6	8.6	1.2	1.9	1.9	0.3	4.0	1.5
4	0.6	2.4	6.8	0.4	0.9	2.8	2.3	2.8
5	2.9	2.1	5.6	5.2	2.7	1.7	3.3	1.0
6	4.7	6.5	7.4	4.7	0.6	3.0	1.3	1.8
7	2.2	1.9	6.3	5.0	1.7	0.5	4.3	2.8
8	0.7	1.3	8.5	1.7	1.6	2.2	0.3	5.3
9	2.0	5.7	1.1	1.7	3.6	1.6	1.8	3.1
10	0.3	0.3	8.5	1.3	1.5	2.5	0.2	0.8
11	1.6	3.0	5.8	1.0	3.0	0.6	0.3	7.3
12	2.1	0.6	3.2	0.1	1.3	2.7	0.4	0.8
13	3.5	2.1	6.9	0.6	4.3	2.6	2.8	0.5
14	0.2	2.5	4.3	0.9	0.7	2.7	0.3	0.9
15	0.8	1.1	2.3	0.8	0.7	2.1	0.1	3.8
16	0.9	0.2	0.7	0.9	0.7	0.4	0.8	1.0
17	0.0	1.2	0.5	0.6	0.3	6.2	2.0	2.6
18	1.4	0.5	5.5	0.4	3.9	5.1	1.8	3.1
19	1.6	0.6	2.2	0.9	5.8	1.9	0.0	2.9
20	0.9	1.9	4.8	2.9	5.6	6.4	0.1	3.8
Mean	1.7	2.5	4.6	1.7	2.1	2.8	1.5	2.8
Min	0.0	0.2	0.5	0.1	0.3	0.3	0.0	0.5
Max	4.7	8.6	8.5	5.2	5.8	6.4	4.3	7.3

Table S11. Coefficients of variation for replicate measurements on 28 faeces samples.

Sample	Al	Ba	Ce	Mn	Sc	Ti	V	Y
	%	%	%	%	%	%	%	%
1	9.9	7.0	1.3	7.8	8.7	8.9	2.6	7.0
2	0.3	10.2	7.0	3.7	4.0	3.6	3.1	0.0
3	1.6	6.7	6.3	0.3	12.4	10.6	7.6	1.5
4	3.7	14.2	0.5	12.6	7.0	5.8	11.8	16.6
5	14.1	1.8	18.2	3.1	9.0	10.6	6.3	19.0
6	8.0	3.6	21.2	7.9	12.2	11.7	11.5	1.6
7	6.0	4.2	19.6	12.7	4.4	4.5	8.5	2.2
8	2.9	6.5	11.6	5.5	8.0	11.5	9.5	1.7
9	8.4	5.1	3.7	14.0	5.1	6.7	0.9	10.7
10	1.4	8.6	3.2	10.2	12.7	7.4	4.1	11.5
11	8.0	2.3	1.4	7.4	0.9	13.5	8.3	8.9
12	11.8	8.1	10.8	2.0	8.7	4.3	7.1	13.2
13	11.0	0.8	0.5	8.5	4.9	16.1	7.2	7.1
14	7.1	8.6	8.5	10.2	8.2	2.8	1.9	6.7
15	1.0	10.1	2.9	4.3	9.0	4.8	8.8	22.4
16	2.1	2.4	5.7	3.5	9.5	8.3	3.8	4.5
17	6.1	4.2	1.1	13.8	16.5	2.8	3.8	19.5
18	4.8	8.3	0.2	6.7	2.6	2.0	0.7	4.5
19	1.6	7.8	3.0	1.1	1.0	9.7	5.5	0.7
20	5.6	5.3	6.6	4.1	7.2	1.7	4.2	2.2
21	1.6	1.8	1.8	1.7	2.5	8.1	1.9	1.0
22	0.2	0.3	1.2	0.2	0.1	1.4	1.3	1.1
23	1.9	0.6	0.2	1.7	4.4	10.2	1.6	2.4
24	3.3	2.2	2.3	2.7	12.4	8.8	2.3	5.2
25	1.2	0.8	1.0	1.3	2.8	5.4	1.3	1.9
26	1.9	2.3	2.3	2.2	1.9	4.1	2.3	2.7
27	2.4	2.9	2.5	2.5	5.1	4.5	1.6	1.9
28	0.3	0.3	11.4	0.6	3.2	7.8	0.1	0.4
Mean	4.6	4.9	5.6	5.4	6.6	7.1	4.6	6.4
Min	0.2	0.3	0.2	0.2	0.1	1.4	0.1	0.0
Max	14.1	14.2	21.2	14.0	16.5	16.1	11.8	22.4

Table S12. Coefficients of variation for replicate measurements on 39 urine samples.

Sample	Al %	Ba %	Ce %	Mn %	Sc %	Ti %	V %	Y %
1	0.9	1.7	5.7	5.3	15.7	0.8	5.2	17.7
2	2.7	4.5	15.9	4.5	33.7	6.3	7.9	21.2
3	5.2	1.6	3.9	9.2	16.4	3.2	1.4	21.1
4	1.3	3.2	4.5	7.4	5.7	4.8	5.5	0.0
5	2.7	1.3	5.9	4.6	15.7	2.7	5.6	26.5
6	2.3	4.5	14.0	4.7	5.9	1.1	8.5	4.6
7	6.2	2.2	16.4	3.6	15.7	8.8	0.4	16.6
8	0.0	3.2	0.0	10.2	4.0	6.6	4.8	20.2
9	5.3	2.3	8.8	10.9	0.0	2.6	12.8	17.0
10	3.5	7.5	11.0	2.7	3.2	0.3	2.0	17.0
11	2.1	1.2	24.5	3.7	18.4	4.7	1.5	36.7
12	5.1	3.6	6.1	4.5	47.1	4.4	5.2	11.5
13	2.6	3.8	12.5	6.8	4.6	6.7	1.2	11.3
14	1.3	3.5	4.6	1.6	14.4	6.2	6.5	6.1
15	1.7	3.0	2.8	6.3	25.7	3.6	3.2	28.3
16	7.0	3.7	12.9	7.2	6.4	3.9	1.4	18.4
17	6.8	4.1	7.9	7.8	15.7	7.2	3.3	6.7
18	7.8	4.0	12.7	21.0	12.1	5.3	11.0	15.2
19	1.8	1.3	27.8	3.1	3.6	6.9	1.1	23.0
20	4.2	0.7	11.2	7.8	11.3	2.7	5.6	15.7
21	6.0	2.1	10.2	6.8	20.2	0.4	7.7	37.2
22	0.6	5.0	8.8	1.5	40.4	2.6	5.5	29.8
23	8.6	3.1	7.0	14.4	0.0	6.4	6.5	26.8
24	6.3	3.7	14.7	3.2	3.4	2.6	0.2	9.7
25	1.2	2.1	10.4	12.1	5.9	11.8	14.1	22.6
26	3.6	5.6	9.7	5.5	17.7	4.6	4.1	10.1
27	10.4	4.8	0.8	9.2	5.7	2.2	9.0	3.4
28	3.8	3.0	1.3	5.4	5.1	5.6	5.8	7.4
29	2.6	0.1	2.0	1.0	2.2	0.5	0.6	7.1
30	1.6	2.8	2.5	5.4	2.3	1.6	0.7	2.9
31	3.7	5.1	1.8	3.4	6.2	7.6	7.8	0.0
32	0.0	1.0	4.8	2.7	4.1	2.8	3.6	15.7
33	0.8	2.0	2.4	1.1	0.3	0.0	6.4	0.0
34	10.9	0.5	0.6	0.5	2.0	0.6	1.2	0.0
35	4.7	1.6	3.1	3.1	2.6	5.2	2.2	1.9
36	1.2	0.5	1.2	0.1	3.4	2.0	0.1	8.7
37	8.5	3.3	3.1	4.6	4.5	5.3	5.4	5.5
38	3.0	4.6	0.6	3.8	3.5	26.2	5.1	10.9
39	1.2	1.0	0.6	0.2	0.6	1.0	0.7	9.2
Mean	3.8	2.9	7.6	5.6	10.4	4.6	4.6	13.9
Min	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0
Max	10.9	7.5	27.8	21.0	47.1	26.2	14.1	37.2

Table S13. Coefficients of variation for replicate measurements on 15 drinking water samples.

Sample	Al %	Ba %	Ce %	Mn %	Sc %	Ti %	V %	Y %
1	1.5	3.4	0.0	2.1	4.9	14.5	6.5	4.9
2	5.4	5.3	2.2	1.8	8.8	9.4	0.4	7.1
3	6.1	9.0	12.9	13.2	9.4	7.4	4.1	0.0
4	7.0	8.2	2.4	0.1	5.9	5.5	0.4	0.0
5	4.0	2.2	9.2	3.0	11.2	0.9	1.7	3.5
6	5.1	11.9	4.9	2.8	5.1	5.1	3.3	7.8
7	14.9	8.1	6.4	9.7	0.0	10.2	4.0	8.3
8	0.9	1.3	1.2	12.1	0.0	6.8	1.4	0.0
9	10.0	2.9	4.8	3.4	12.9	10.7	1.8	9.4
10	7.2	2.5	10.8	10.1		8.7	3.9	9.4
11	4.3	10.6	10.3	7.2		11.2	4.6	10.9
12	0.5	1.4	16.6	3.8				0.0
13	4.9	4.0	0.1	0.9	14.3	13.3	2.3	2.6
14	7.3	1.1	1.4	4.3	0.3	6.7	7.0	1.5
15	1.1	0.5	3.5	3.6	10.3	10.0	1.7	4.3
Mean	5.4	4.8	5.8	5.2	6.9	8.6	3.1	4.6
Min	0.5	0.5	0.0	0.1	0.0	0.9	0.4	0.0
Max	14.9	11.9	16.6	13.2	14.3	14.5	7.0	10.9

Table S14. Coefficients of variation for replicate measurements on 31 food samples.

Sample	Al	Ba	Ce	Mn	Ti	Y
	%	%	%	%	%	%
1	12.0	19.6	16.9	4.1	4.3	
2	11.2	21.4	31.4	2.2	20.5	4.0
3	11.7	14.4	23.2	12.9	31.8	29.1
4	7.2	15.5	7.1	0.9	12.8	8.7
5	23.6	13.4	25.9	0.2	3.5	28.1
6	9.8	30.2	25.0	16.3	0.7	22.2
7	21.5	10.2	14.8	7.3	12.0	3.2
8	13.7	13.7	9.8	1.0	18.9	21.3
9	17.3	2.3	24.5	4.1	6.8	12.5
10	9.6	13.7	21.6	5.0	3.1	
11	9.9	17.6	13.8	15.0	13.2	6.8
12	11.7	17.8	14.0	10.4	6.4	17.3
13	1.5		11.2	11.2	13.0	
14	3.2	11.9	17.4	14.8	17.4	
15	23.9	22.0	10.3	15.5	20.6	2.6
16	13.2	23.4	36.9	19.7	27.7	28.9
17	2.3	19.2	24.0	1.3	5.0	23.8
18	14.3	15.2	24.0	2.8	25.3	25.6
19	25.9	14.5	17.9	5.4	7.0	19.7
20	19.1	7.2	24.3	23.7	2.5	24.1
21	20.7	22.2	13.8	12.8	0.3	16.1
22	17.8	4.5	31.1	22.3	29.3	17.5
23	22.0	13.0	20.6	5.9	8.1	12.6
24	25.2	22.9	35.5	9.5	6.2	15.7
25	23.8	17.8	8.7	19.5	17.3	21.1
26	32.3	27.9	9.5	13.3	13.7	2.7
27	25.1	6.0	19.3	4.6	14.8	28.3
28	26.5	3.8	5.1	15.5	4.4	16.3
29	32.3	29.8	8.3	3.6	10.1	11.0
30	6.7	24.2	23.5	15.6	14.1	15.5
31	10.3	28.7	26.0	7.3	17.3	25.5
Mean	16.3	16.8	19.2	9.8	12.5	17.0
Min	1.5	2.3	5.1	0.2	0.3	2.6
Max	32.3	30.2	36.9	23.7	31.8	29.1